



10 CFR 50.73

NMP1L3129  
February 8, 2017

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

Nine Mile Point Nuclear Station, Unit 1  
Renewed Facility Operating License No. DPR-63  
Docket No. 50-220

Subject: NMP1 Licensee Event Report 2017-001, Manual Reactor SCRAM Due to High Turbine Vibration

In accordance with the reporting requirements contained in 10 CFR 50.73(a)(2)(iv)(A), please find enclosed NMP1 Licensee Event Report (LER) 2017-001, Manual Reactor SCRAM Due to High Turbine Vibration.

There are no regulatory commitments contained in this letter.

Should you have any questions regarding the information in this submittal, please contact Dennis Moore, Site Regulatory Assurance Manager, at (315) 349-5219.

Respectfully,

A handwritten signature in black ink, appearing to read "Robert E. Kreider Jr.", written in a cursive style.

Robert E. Kreider Jr.  
Plant Manager, Nine Mile Point Nuclear Station.  
Exelon Generation Company, LLC

REK/RSP

Enclosure: NMP1 Licensee Event Report 2017-001, Manual Reactor SCRAM Due to High Turbine Vibration

cc: NRC Regional Administrator, Region I  
NRC Resident Inspector  
NRC Project Manager


IE22  
NRR

**Enclosure**

**NMP1 Licensee Event 2017-001,  
Manual Reactor SCRAM Due to High Turbine Vibration**

**Nine Mile Point Nuclear Station, Unit 1**

**Renewed Facility Operating License No. DPR-63**

<b>NRC FORM 366</b> (06-2016)		<b>U.S. NUCLEAR REGULATORY COMMISSION</b>			<b>APPROVED BY OMB: NO. 3150-0104</b>		<b>EXPIRES: 10/31/2018</b>						
		<b>LICENSEE EVENT REPORT (LER)</b> (See Page 2 for required number of digits/characters for each block)											
(See NUREG-1022, R.3 for instruction and guidance for completing this form <a href="http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/">http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/</a> )													
<b>1. FACILITY NAME</b> Nine Mile Point Unit 1					<b>2. DOCKET NUMBER</b> 05000220		<b>3. PAGE</b> 1 OF 6						
<b>4. TITLE</b> Manual Reactor Scram Due to High Turbine Vibration													
<b>5. EVENT DATE</b>			<b>6. LER NUMBER</b>			<b>7. REPORT DATE</b>			<b>8. OTHER FACILITIES INVOLVED</b>				
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER			
12	10	2016	2017	- 01	00	02	08	2017	NA	NA			
<b>9. OPERATING MODE</b>  1			<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)</b>										
			<input type="checkbox"/> 20.2201(b)			<input type="checkbox"/> 20.2203(a)(3)(i)			<input type="checkbox"/> 50.73(a)(2)(ii)(A)			<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
			<input type="checkbox"/> 20.2201(d)			<input type="checkbox"/> 20.2203(a)(3)(ii)			<input type="checkbox"/> 50.73(a)(2)(ii)(B)			<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
			<input type="checkbox"/> 20.2203(a)(1)			<input type="checkbox"/> 20.2203(a)(4)			<input type="checkbox"/> 50.73(a)(2)(iii)			<input type="checkbox"/> 50.73(a)(2)(ix)(A)	
			<input type="checkbox"/> 20.2203(a)(2)(i)			<input type="checkbox"/> 50.36(c)(1)(i)(A)			<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)			<input type="checkbox"/> 50.73(a)(2)(x)	
<b>10. POWER LEVEL</b>  97			<input type="checkbox"/> 20.2203(a)(2)(ii)			<input type="checkbox"/> 50.36(c)(1)(ii)(A)			<input type="checkbox"/> 50.73(a)(2)(v)(A)			<input type="checkbox"/> 73.71(a)(4)	
			<input type="checkbox"/> 20.2203(a)(2)(iii)			<input type="checkbox"/> 50.36(c)(2)			<input type="checkbox"/> 50.73(a)(2)(v)(B)			<input type="checkbox"/> 73.71(a)(5)	
			<input type="checkbox"/> 20.2203(a)(2)(iv)			<input type="checkbox"/> 50.46(a)(3)(ii)			<input type="checkbox"/> 50.73(a)(2)(v)(C)			<input type="checkbox"/> 73.77(a)(1)	
			<input type="checkbox"/> 20.2203(a)(2)(v)			<input type="checkbox"/> 50.73(a)(2)(i)(A)			<input type="checkbox"/> 50.73(a)(2)(v)(D)			<input type="checkbox"/> 73.77(a)(2)(i)	
			<input type="checkbox"/> 20.2203(a)(2)(vi)			<input type="checkbox"/> 50.73(a)(2)(i)(B)			<input type="checkbox"/> 50.73(a)(2)(vii)			<input type="checkbox"/> 73.77(a)(2)(ii)	
			<input type="checkbox"/> 50.73(a)(2)(i)(C)			<input type="checkbox"/> OTHER			Specify in Abstract below or in NRC Form 366A				
<b>12. LICENSEE CONTACT FOR THIS LER</b>													
LICENSEE CONTACT Dennis Moore, Site Regulatory Assurance Manager								TELEPHONE NUMBER (Include Area Code) (315)349-5219					
<b>13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT</b>													
CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX				
B	TA	PSF	GE	Y	X	EA	CNTR	GE	Y				
<b>14. SUPPLEMENTAL REPORT EXPECTED</b> <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE)					<input checked="" type="checkbox"/> NO								
					<b>15. EXPECTED SUBMISSION DATE</b>		MONTH	DAY	YEAR				
							NA	NA	NA				
<b>ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)</b> On December 10, 2016 at 08:48, Nine Mile Point Unit 1 performed a manual scram of the reactor due to increased vibrations on the main turbine. Following the scram, the High Pressure Coolant Injection (HPCI) System automatically initiated. This event is reportable under 10 CFR 50.72(b)(2)(iv)(B) and 10 CFR 50.72(b)(3)(iv)(A) as any event or condition that resulted in a manual or automatic actuation of any of the systems listed in 10 CFR 50.72(b)(3)(iv)(B).  During performance of a load drop to 95% power in support of Turbine Stop Valve Testing, main turbine bearing vibrations rose on several bearings. The Unit 1 Reactor was scrammed and the main turbine was secured when main bearing #1 reached procedural limits. The root cause of the event was a steam leak from a threaded pipe/cap connection that was not seal welded when originally supplied from the manufacturer. The connection has now been seal welded.  A combination of tight tolerance in conjunction with the location of the steam leak resulted in the vibrations when power level was changed.  The event described in this LER is documented in the plant's corrective action program.													

**LICENSEE EVENT REPORT (LER)  
CONTINUATION SHEET**

(See NUREG-1022, R.3 for instruction and guidance for completing this form  
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to [Infocollects.Resource@nrc.gov](mailto:Infocollects.Resource@nrc.gov), and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Nine Mile Point Unit 1	05000220	2017	001	- 00

**NARRATIVE****I. DESCRIPTION OF EVENT****A. PRE-EVENT PLANT CONDITIONS:**

Prior to the event, Nine Mile Point Unit 1 (NMP1) was operating at 100% with Operations performing a load drop to 95% to support turbine stop valve testing and control rod pattern adjustment.

**B. Event:**

On December 10, 2016 at 08:48, Nine Mile Point Unit 1 performed a manual scram of the reactor due to increased vibrations on the main turbine. This was performed during a load drop to 95% reactor power to facilitate turbine stop valve testing and rod line adjustments. At 95% reactor power operations noted rising vibrations on the main turbine bearings. The reactor was manually scrammed and the main turbine was secured as the observed vibrations reached procedural limits. Following the scram, as designed, HPCI initiated on low Reactor Pressure Vessel (RPV) water level due to the initial RPV level shrink. HPCI was secured following recovery of RPV water level above the low level scram setpoint of 53 inches.

There was no impact on Nine Mile Point Unit 2 (NMP2) from this event.

Operations performed the ENS notification (#52425) required by 10 CFR 50.72(b)(2)(iv)(B) and 10 CFR 50.72(b)(3)(iv)(A) for the manual reactor scram and for the expected HPCI initiation due to the Main Turbine Trip. This notification met the 4 hour and 8 hour reporting requirements. This LER is being submitted pursuant to the requirements of 10 CFR 50.73(a)(2)(iv)(A).

**C. INOPERABLE STRUCTURES, COMPONENTS, OR SYSTEMS THAT CONTRIBUTED TO THE EVENT:**

None

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**D. DATES AND APPROXIMATE TIMES OF MAJOR OCCURRENCES:**

The times below all occurred on December 10, 2016.

08:00 – Operations commences load drop from 100% to 95% to facilitate turbine stop valve testing and perform a control rod pattern adjustment.

08:10 – The elevated vibrations are first observed and Operations take action in an effort to mitigate vibrations by returning the plant to pre-transient conditions.

08:48:04 – Vibration levels approach procedurally limited thresholds and operations performs a manual scram of the reactor and manually trip the turbine.

08:48:09 – HPCI actuation signal received on RPV Low Level.

08:48:14 – Expected generator lock-out is received and initiates the fast transfer of Power Board 11 and 12. Power Board 11 fast transfers as expected; however, Power Board 12 fails to fast transfer. Power Board 12 is re-energized 16 minutes later at 09:04

08:48:14 – HCPI 11 Train initiates, level is restored above 53 inches (RPV Low Level Setpoint) and initiation signal reset less than 1 minute after at 08:49.

**E. OTHER SYSTEMS OR SECONDARY FUNCTIONS AFFECTED:**

Power Board 12 failed to fast transfer following the turbine trip due to high resistance on feeder breaker (R122) auxiliary contacts. This resulted in HPCI 12 train not starting following the manual trip of the main turbine. The failure to fast transfer also resulted in the loss of associated, non-safety related, downstream loads on Power Board 12. Power Board 12 was re-energized 16 minutes later at 09:04.

**F. METHOD OF DISCOVERY:**

This change in condition was immediately recognized by Operations during the load drop to 95% based on the close monitoring of plant conditions and adherence to station procedures.

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**G. MAJOR OPERATOR ACTION:**

Based on the monitoring of plant conditions and in accordance with station procedures Operators performed the following; manually scrammed the reactor, manually tripped the main turbine, and energized Power Board 12 at 09:04 following the failure to fast transfer.

**H. SAFETY SYSTEM RESPONSES:**

All safety systems responded as expected. The HPCI 11 Train initiated. HPCI is a flow control mode of the normal feedwater system and is not an emergency core cooling system. At Nine Mile Point Unit 1, a HPCI system actuation signal on low reactor pressure vessel (RPV) level is normally received following a reactor scram, due to level shrink. HPCI 12 Train did not start due to Power Board 12 failing to fast transfer. Operations energized Power Board 12 at 09:04

**II. CAUSE OF THE EVENT:**

The root cause of the event was a steam leak from a threaded pipe/cap connection that was not seal welded when originally supplied from the manufacturer. During the performance of the load drop the pre-existing steam leak and the dynamic conditions within that area created a condition in which internal clearances were reduced resulting in an internal rub on the HP Turbine. This, in turn, resulted in increased vibrations to the limits prescribed in the operating procedure.

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**III. ANALYSIS OF THE EVENT:**

This event was reported under 10 CFR 50.72 (b)(2)(iv)(B) for the manual scram and 10 CFR 50.72(b)(3)(iv)(A) as any event or condition that resulted in a manual or automatic actuation of any of the systems listed in 10 CFR 50.72(b)(3)(iv)(B) due to the High Pressure Cooling Injection (HPCI) actuating during this event. The HPCI 11 Train initiated and performed as designed. HPCI is a flow control mode of the normal feedwater system and is not an emergency core cooling system. At Nine Mile Point Unit 1, a HPCI system actuation signal on low reactor pressure vessel (RPV) level is normally received following a reactor scram, due to level shrink. HPCI 12 Train did not start due to Power Board 12 failing to fast transfer; operations energized Power Board 12 at 09:04. There was no actual nuclear safety consequences associated with this event and all other safety systems and balance of plant equipment operated as expected.

**IV. CORRECTIVE ACTIONS:****A. ACTION TAKEN TO RETURN AFFECTED SYSTEMS TO PRE-EVENT NORMAL STATUS:**

HCPI initiation signal was reset, Power board 12 was restored.

**B. ACTION TAKEN OR PLANNED TO PREVENT RECURRENCE:**

1. Leaking pipe/cap was seal welded. The remaining connections were inspected and verified tight.
2. Remaining pipe/cap connections will be seal welded during the next refueling outage.

**V. ADDITIONAL INFORMATION:****A. FAILED COMPONENTS:**

Threaded pipe/cap connection in HP Turbine area

Power Board 12, Feeder Breaker R122 Auxiliary Contacts

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**B. PREVIOUS LERS ON SIMILAR EVENTS:**

None

**C. THE ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIIS) COMPONENT FUNCTION IDENTIFIER AND SYSTEM NAME OF EACH COMPONENT OR SYSTEM REFERRED TO IN THIS LER:**

Component	IEEE 803	IEEE 805
High Pressure Coolant Injection System	---	SJ
Main Turbine	TRB	JJ
Power Board 12	JX	EA
PB 12 Breaker R122 Aux. Contacts	CNTR	EA
Reactor Vessel	RPV	AD
Threaded Pipe/Cap Connection	PSF	TA

**D. SPECIAL COMMENTS:**

None